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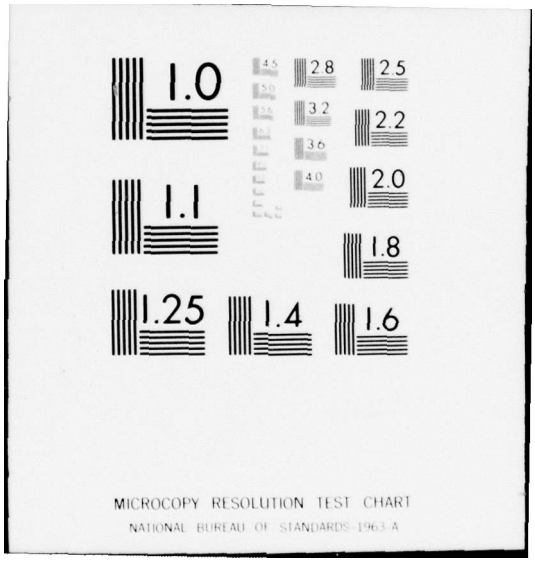
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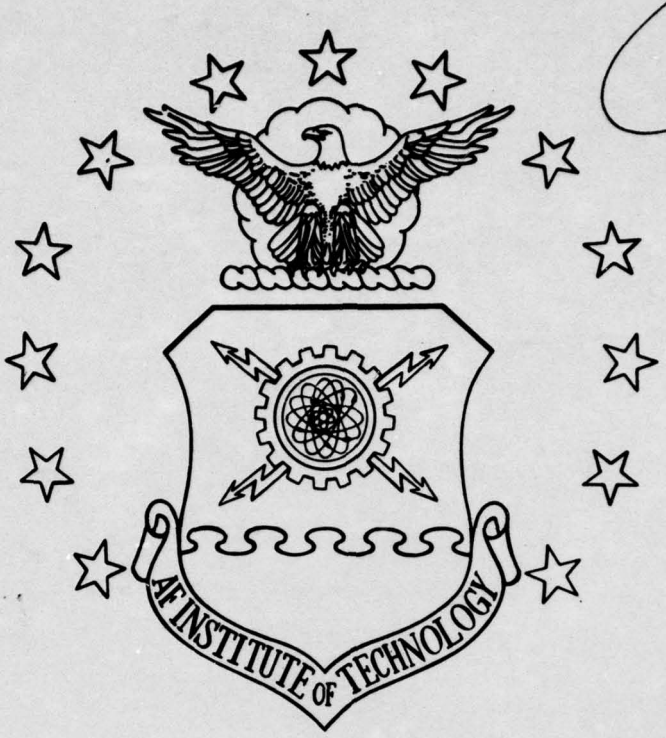

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INFORMATION REQUIREMENTS FOR A A PROCUREMENT MANAGEMENT INFORMATION SYSTEM

John D. Ellwood, Captain, USAF
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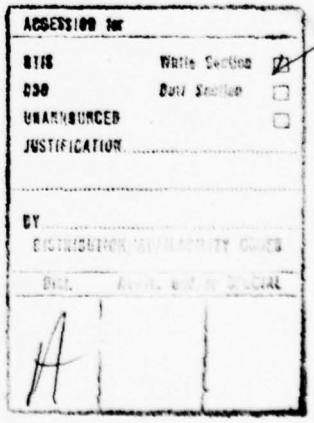

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This study examines the essential information requirements for the effective management of a procurement organization. Both critics of and spokesmen for the Department of Defense (DoD) have indicated there is inadequate control of DoD expenditures, resulting in huge cost overruns and late deliveries. There is a need for more managerial control of the acquisition cycle of the procurement process. The Air Force Systems Command Acquisition Management Information System (AFSCAMIS) is described and some justification for this type of a procurement management information system is presented. This study also consists of a literature search to determine concepts related to information requirements in the business world. Two samples of procurement managers were surveyed in order to define their information requirements and determine if their needs were being satisfied. The survey instrument addressed users' satisfaction and identified both beneficial and undesirable features of their information systems. If information requirements are correctly identified and then satisfied by a procurement management information system, contract administration and procurement management can be improved.

SLSR 14-75B

INFORMATION REQUIREMENTS FOR A A PROCUREMENT MANAGEMENT INFORMATION SYSTEM

A Thesis

Presented to the Faculty of the School of Systems and Logistics

of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the Requirements for the

Degree of Master of Science in Logistics Management

By

John D. Ellwood, BS
Captain, USAF

Harry L. Braddock, BBA
First Lieutenant, USAF

August 1975

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This thesis, written by

Captain John D. Ellwood

and

First Lieutenant Harry L. Braddock

has been accepted by the undersigned on behalf of the faculty of the School of Systems and Logistics in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE IN LOGISTICS MANAGEMENT

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Committee Chairman

READER

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CHAPTER I

INTRODUCTION

Statement of the Problem

This thesis examines the essential information requirements for the effective management of a procurement organization. A need exists for the development of a method to determine what information procurement managers require (4; 9). Such a method should assist in identification of the information requirements of the primary users at the different levels of management of a procurement organization (4; 7; 8; 9).

Importance of the Problem

The Air Force Systems Command Acquisition Management Information System (AFSCAMIS), formerly entitled Military Standard Contract Administration Procedures (MILSCAP), was originally designed to provide management control of the complete acquisition cycle of the procurement process (18:4-7).[1] AFSCAMIS is a unique Air Force

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[1]The Data Project Directive (DPD) of the Air Force Systems Command Acquisition Management Information System (AFSCAMIS), dated 11 March 1975, granted permission to proceed with a restructured AFSCAMIS program. Basically, the restructured program will develop a central data base

Systems Command (AFSC) program to facilitate the exchange of pertinent data among contract administration activites in varous DoD components performing procurement, production, material management, and financial functions (18:4). Although previous work has been accomplished to determine what information procurement managers need, the requirement still exists for additional research to further define their essential information needs (4; 5; 7; 8; 9; 13).

Figure 1 illustrates how AFSCAMIS will integrate the acquisition cycle (18:11Atch.1). In the preaward phase the following actions take place: Requirement Approval, Statement of Work (SOW) preparation, Purchase Request (PR), Determinations and Findings (D&F), and the Request for Proposal (RFP). Then, after solicitation of bids, the funds are committed and the contract is awarded. Finally, in the postaward phase the DD Form 250 Material Inspection Receiving Report (MIRR) is received, indicating final acceptance and the contract is eventually retired. As illustrated by figure 1 the Air Force Systems Command Acquisition Management Information System provides information during all phases of contract administration.

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and implement a data base management system. Source Data Automation (SDA) will be implemented at the buying activities, Air Force Plant Representative Offices (AFPRO), Air Force Contract Management Division (AFCMD), and at Air Force Logistics Command (AFLC), thus providing them with an interactive capability to update and query the central data base.

AFSC ACQUISITION MANAGEMENT INFORMATION SYSTEM (AFSCAMIS) SCOPE

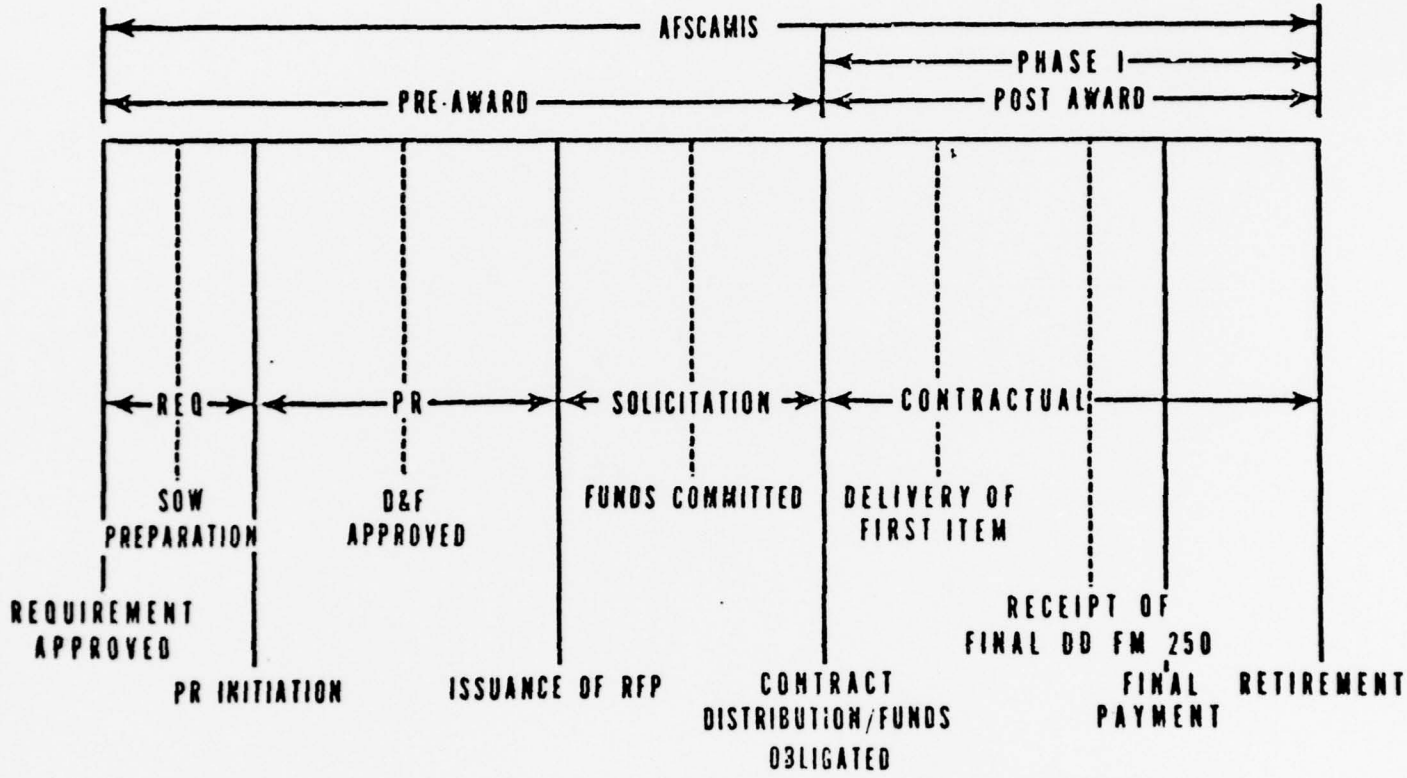

Figure 1. AFSC Acquisition Management Information System (AFSCAMIS) Scope

SOURCE: Martin Dean Martin, Lt. Col., USAF, "Design and Development Considerations for Function Analysis," Unpublished research paper, AFSC, Andrews AFB, Md., 1973.

There is abundant information available supporting the fact that an automated management information system is needed in order to better administer the U.S. Air Force procurement transactions (4; 7; 8; 9; 13; 18).

General Merrell (17:18) former Commander of the Air Force Logistics Command, quoted the Mahon Committee report concerning defense procurement and its impact on American society:

> The magnitude of defense procurement and logistics activities and policies are such as to directly affect every state and directly or indirectly, the vast majority of the American people. In 1967 alone, defense prime contract awards totaled $44.6 billion and encompassed 15.1 million separate procurement actions. Inventories of weapons and equipment in use in this time frame amounted to $95.5 billion. . . .

He went on to say that every administrative device that can be developed and applied is used to assure that the best interests of the nation are protected and served. He further noted the magnitude of this responsibility with another quote from the Mahon Committee report:

> The basic objective of those charged with the administration of a program of this awesome magnitude is to secure prime quality equipment and weapons systems at reasonable costs and in an efficient manner. The most effective way yet demonstrated to achieve this objective is through timely, competitive procurement. . . . maximum effort must be made by defense procurement and contracting officials to assure the acquisition of new systems of desired quality at fair and reasonable prices to the government [17:18].

United States Senator Proxmire, frequent critic of defense department policy, (16:20-26) criticized the

defense department acquisition management in a speech before the United States Senate when he said:

> There is no adequate machinery, either in the executive or legislative branch to control the total amount spent or the way in which military funds are disbursed. This is especially the case with respect to contracting for major weapons systems. The results are vast inefficiencies in procurement, waste in supply and less security. . . .

He further stated that the concept of total package procurement has not solved the problems of cost overruns and late delivery. Senator Proxmire also indicated that there should be some changes in the military contracting and financial systems, specifically:

> . . . institute immediately an effective and uniform system of accounting for contractors. . . . institute serious penalties for contractors whose delivery dates are not met . . . . find some method of monitoring and auditing contracts while they are in process in order to avoid the huge cost overruns. . . . [16:20].

Discussions with Lt. Colonel Martin who has over twelve years of Procurement Management experience (7), and Mr. Kayafas who works in top management in the AFSCAMIS Program Office (4) verified the existing need for determining the essential information requirements for the U.S. Air Force procurement system. Major Michalowski (9), of the Business Research Management Center, Air Force Institute of Technology, also indicated that a need exists to determine procurement management information requirements.

Background

Information requirements. In discussing information requirements Emch (3:426) stated:

> A system of control should require no more than is absolutely necessary in the way of reports, data, and statistics. The determination of what is necessary should conform to this simple dictum: in accordance with your responsibilities and authority, can you or should you do anything about the information that is presented to you and, if so, what? . . .

Emch also indicated that timely and accurate information is necessary especially in organizations that have grown beyond the size where they can be effectively managed by direct observation.

Zani (19:430) listed some questions which help to specify information requirements for the manager:

1. What decisions are made?
2. What decisions should be made?
3. What factors are important in making these decisions?
4. How and when should these decisions be made?
5. What information is useful in making these decisions?

Baumgartner (1:49) said that an information system should provide management with:

1. A ranking of problems by criticality.
2. An indication of potential trouble spots.
3. Anticipated schedule slippage and cost variances.

4. A means of determining where management can withdraw resources to assist more critical phases.

Ross (14:128) stated that an organization cannot survive without information, and that the functions of management cannot be performed without the flow of information to decision makers. He said that control is dependent upon the amount of information available for measuring performance. Ross also indicated that it is essential that the data base system satisfy the requirements of each user, otherwise the user will continue to maintain his own system and thereby defeat the purpose of the central data base (14:161). He further stated that it is very difficult to get managers to be specific about their information needs. According to Ross, avoiding direct questions in the interview technique increases the probability of getting the right answers (14:282).

Lt. Colonel Martin indicated that some of the important considerations when defining information requirements were:

1. The quality of the information that is available, and the confidence that the user has in the validity of the information.

2. The output format and level of detail depends on who they are, what they need, and at what level of management the information is to be used.

3. The problems of determining what information the user requires, because in some cases the user does not know his information requirements (7).

Lieutenant Colonel D'Angelo[2] (2) indicated that some of the important considerations of determining information needs are:

1. Is the data in the proper format?

2. Are the most important things identified?

3. Are delinquent events or exceptions identified?

Li (6:22) stated that the most critical question involved in designing a management information system is the determination of what information is necessary to enable the manager to effectively make decisions. This cannot be effectively identified by what is available as much of the data is superfluous and redundant. Much information for good decision making is unavailable.

Five basic approaches for determination of the information needs of a manager are listed by Sollenberger (15:58):

1. A questionnaire be given each manager on which he can indicate the information he wants and needs;

---

[2]Lieutenant Colonel Anthony P. D'Angelo, Head, Department of Management Studies, Air Force Institute of Technology has extensive experience in Logistics Management and has done independent research in the field of management systems.

2. Observation of the job and use of job descriptions;
3. Interviews with the manager to obtain his view and opinion;
4. Selection of functional managers to specify needs for all jobs within their areas of responsibility; and,
5. Usually as a supplement to other methods, the use of industry studies and literature in specific areas.

Mockler (11:479) indicated that the two major problems encountered when trying to identify information needs are: (1) the operating managers are reluctant to spend the time needed to define their requirements, and (2) a systems analyst needs considerable skill in interviewing techniques in order to obtain valid information about future and ideal needs. He said that this occurs because operating managers tend to describe the information that they are presently receiving rather than what information is required in order to make better decisions.

Mr. Kayafas (4; 5) and Mr. Meacham (8) who both work in the AFSCAMIS Program Office said it is important to define the user prior to determining what he requires and how these requirements will be satisfied. Mr. Kayafas also pointed out that many users determine their information requirements based on the amount of work or time required to obtain the information. Mr. Kayafas also indicated that managers sometimes cannot determine their information requirements.

Professor Post (13) who has extensive experience studying and teaching information systems theory said that a problem with large information systems is the interaction between several functional areas and the resulting communication problems. For example, in a very specialized functional area the jargon, usage, habits, and traditions may require translation before being useful to another specialized functional area. Professor Post also talked about the altitude problem within information systems; that is, there is a different data requirement at different functional levels. He emphasized that responsibilities and participation required at each level of management are different (13).

Mr. Shillito (16:53-57), who is a former Assistant Secretary of Defense for Installations and Logistics, discussed some management techniques developed to improve acquisition management and explained some of the reasons for problems in the weapons acquisition process. He believes that a better training program and longer tenure for key personnel in System Program Offices will improve the situation. He recommended that the weapons systems contract should be structured into a discrete number of significant milestones to permit an objective evaluation of the contractor's actual performance, as against planned accomplishment.

As indicated by the preceding discussion, there is a need to develop a procurement information system which will encompass the complete procurement cycle. Military Standard Contract Administration Procedures (MILSCAP) was one of the first major attempts to develop an integrated procurement information system. Its purpose was to simplify, standardize, and automate procurement related logistics and financial data. The MILSCAP Program as related to AFSC was replaced by the AFSCAMIS program (18:4-7).

The AFSCAMIS System. The Air Force Systems Command Acquisiton Management Information System (AFSCAMIS) is a computerized management information system concerning Air Force Systems Command procurement management (18).

The Data Automation Requirement (DAR) (18:Tab A3) for the AFSCAMIS states that AFSCAMIS will provide management control of the complete acquisition cycle (requirement through contract close out) and in-depth visibility of contract, production, delivery, and financial data. The DAR (18:4) also states that:

> The AFSC procurement management information system will satisfy both internal and external requirements utilizing a centralized data base within AFSC. Externally it will facilitate exchange of pertinent data among contract administration activities in various DoD components performing procurement, production, material management, and financial functions. Internally it will provide timely information for those AFSC activities concerned with projects and/or programs involving research, development, and acquisition. It will provide a bridge for flow of information between pre-award and post-award efforts. It

> will eliminate the need for numerous manual and computerized program management systems currently used by subcommands and will supplant other unique systems when fully developed.

As indicated in the preceding quote, the AFSCAMIS is designed to provide the procurement managers in the Air Force Systems Command with the information that they require in order to better perform their duties. The system should improve contract administration and procurement management by providing reliable, timely information. Hopefully, the AFSCAMIS will reduce the complaints of critics of defense procurement, and provide the additional information necessary for the managers in the procurement system to make better decisions. Therefore, if the information requirements can be identified, the goals of AFSCAMIS can be achieved.

Objectives of Research

As stated before, an effective management information system which provides accurate information, in the desired format, when and where needed, is needed for decision making. The information must be transferred to the levels needed, and also be available for the needs of the higher levels of management.

Discussions with knowledgeable personnel (4; 7; 9) indicate that Headquarters USAF is concerned about the adequacy of the information that will be provided by

the proposed AFSCAMIS, and a need exists to validate the information requirements.

This thesis examines the information requirements for procurement management information systems. Research in this area can assist in determining what information procurement managers need in order to make effective decisions. Conceivably, this research can help define the procurement manager's information requirements as they pertain to the AFSCAMIS system. To achieve this, the study was designed to address the following questions.

Research Questions

1. Determine if procurement managers' information needs are being satisfied.

2. Determine if procurement managers are receiving duplicate information.

3. Determine if procurement managers are satisfied with the timeliness of their information products.

4. Determine if procurement managers are confident about the quality of information in the reports that they receive.

CHAPTER II

METHODOLOGY

The chapter describes the research methodology. After an overview, the methodology is discussed in terms of the population, sample, data collection plan, and data gathering instrument. It also includes a data analysis section and a list of assumptions and a limitations.

Overview

A literature review provided background information for this thesis. The literature review indicated that an effective management information system is absolutely necessary for optimum management effectiveness in any large organization.

The first factor considered in defining the population of interest, or target population, was to determine which levels of management would be asked to assist in the gathering of data concerning the information requirements of procurement managers. Since the purpose of this thesis was to determine the information requirements of procurement managers, it logically followed that procurement management personnel would be included in the population to be surveyed. The target population included procurement management personnel within the Department

Defense (DoD) and other government agencies. Although AFSCAMIS is a system peculiar to Air Force Systems Command the researchers assumed that the information needs of all procurement managers are sufficiently similar to allow extrapolation of application. Primary, rather than secondary, data sources were used in this research. Surveys were administered to two samples of procurement managers. Data obtained from these surveys include: (1) personal data, (2) the duties of the person interviewed, (3) their information requirements, (4) the type of information system that they are currently using, and (5) the characteristics of their information system.

Tables are used to describe the data gathered from the surveys and the results are subdivided into classes of data in order to analyze the findings and provide recommendations concerning procurement management information requirements.

Appendix A is a draft survey instrument which was pilot tested on thirty-seven personnel who attended an Advanced Contract Administration class. This class was taught by the Continuing Education Division, School of Systems and Logistics, Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio. That survey instrument was revised to clear up some unanticipated ambiguities, and was reconstructed in a more useful format.

Appendix B is a revised survey instrument which was used for collecting the data used in this thesis.

Population and Sample

The sources of this research are described in terms of the universe and population from which the research sample was drawn. The universe for this research was all DoD and other government procurement managers.

The population for this research was those DoD and other government agency procurement personnel who have experience in procurement management. For the purposes of this study, managers included all supervisory personnel involved in decision making within a procurement organization.

The survey instrument was administered to two samples of procurement managers. There were two captive and receptive samples available for data collection. The first sample (sample A) was a homogeneous group of procurement management personnel in Air Force Systems Command, Aeronautical Systems Division (AFSC/ASD) at Wright-Patterson Air Force Base, Ohio. These personnel at Aeronautical Systems Division (ASD) have similar amounts of experience and are generally comparable (7). The personnel of this organization procure, manage, and administer contracts for research, development, testing and engineering. Eleven personnel were included in sample A, and they were surveyed during May 1975.

Sample B consisted of ninety-nine personnel who attended the Advanced Contract Administration Course in the Continuing Education Division at the School of Systems and Logistics, Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio, during the period January 1975 through June 1975. This heterogeneous group of personnel presumably with disparate values, opinions and backgrounds, work in different areas of contract administration within the Department of Defense (DoD) and other government agencies (7; 12). They consisted of personnel in the preaward, award, and postaward phases of contract administration. Some personnel were involved directly in contract administration, while others were primarily concerned with production, logistics, accounting and finance, or quality assurance (7).

Note that both of the above sample groups included a mix of personnel; i.e., military and civilians at several different grade levels (see table 3-3). Thus, sample A consisting of personnel from ASD have similar jobs, while sample B from the Advanced Contract Administration classes, had a broad range of types of duties and areas of responsibility (see table 3-5).

Data Collection Plan

Data was collected to address the research questions by using a survey instrument. The personnel sampled

filled out the survey instrument and provided answers to the researchers, who in turn recorded the data.

Instrument

As stated previously, appendix A is the draft survey instrument used for the pilot test and appendix B is the revised survey instrument which was used to gather data for this study. These survey instruments were reviewed by personnel who are working in the AFSCAMIS program and were also reviewed by other personnel who are on the faculty of the Air Force Institute of Technology School of Systems and Logistics (2; 4; 5; 7; 8; 9; 10; 12). These personnel are experienced in survey instrument construction and, more importantly, they are familiar with the orientation of procurement personnel.

The first survey instrument (appendix A) is divided into three sections which gather information on personal data, time allocation, and procurement information requirements and characteristics as they pertain to the person answering the question. The first survey instrument was tested by means of a pilot test. Essentially this pilot test consisted of a series of interviews with experts in the procurement field from the following areas: faculty of the School of Systems and Logistics, personnel from the Business Research Management Center, procurement management

personnel from the AFSCAMIS program office, and personnel from an Advanced Contract Administration class in the School of Systems and Logistics. The person interviewed was informed of the purpose of the study and presented with a copy of the proposed survey instrument. Persons interviewed were then asked to verbally respond to the questions and offer criticism in terms of understandability, applicability of questions, and validity of data to be gathered. The pilot test resulted in a redesign of the survey instrument (appendix B).

The revised survey instrument (appendix B) consists of one part, and was structured so that it would be easier for the respondent to understand the questions. Subject areas relevant to the research questions of this thesis were included in the survey instruments. The respondent was asked to answer some of the questions in his own words, and others by selecting an answer from several given. Consequently, some of the data could be tabulated, while other data could only be grouped into categories of nominal data and then analyzed. The questions allowed the researchers to determine the personal data on each respondent, plus obtain his opinion on certain questions which concern the information requirements and characteristics of a procurement organization.

The data collected from the samples was sorted into different categories, such as the amount of experience,

educational background, and type of job. It was also grouped into major areas applicable to the research questions and then analyzed (see chapters III and IV).

Since the data was accumulated from a sample rather than a census, consideration was given to generalizing the results; that is, since a sample considers only part of the elements of a population, only inference that the results are applicable to any larger group is possible.

Since there existed the probability that some questions would not be answered by the respondents, a decision rule was established that at least 60 percent of the respondents must have answered a particular question or the question would be considered invalid. Interviews with faculty members of the School of Systems and Logistics and a review of appropriate texts seemed to conclude that the researcher should establish criteria and guidelines prior to collection of data. This sixty percent cut-off was based on the assumption that a response by less than 60 percent of the sample would result in a questionable reply, since a low response could indicate that the question was ambiguous.

After the survey instruments were completed by the respondents, the researchers calculated the response rates for each question and determined which questions were valid. The responses to each question were recorded on

a tabulation sheet and the tables in chapter III were constructed to show the analysis of responses, as computed by total responses.

An analysis of data provided sufficient information to enable the researchers to make recommendations and suggestions concerning the information that the system should provide to procurement managers (see chapter IV).

Assumptions

1. An underlying assumption made in the identification of personnel selected as informants in this study was that regardless of classification, grade, or position, the sample of personnel from ASD (sample A) represented a homogeneous grouping with regard to their viewpoints about procurement operations.

2. It is also assumed that the personnel sampled (sample B) who were attending the Advanced Contract Administration Course are a heterogeneous group of personnel with different types of experience and duties within procurement management. Due to the fact that sample B personnel had been previously selected to attend this course, the researchers assumed that the personnel in sample B were experienced in procurement management.

3. The sample selection techniques used by the researchers assured representativeness of typical procurement managers.

4. If less than 60 percent of the respondents did not answer a particular question, that question was considered invalid.

5. The time period used for this study (January-July 1975) was of adequate length to produce data of sufficient quantity to yield useful analysis.

Limitations

1. The results of this research can only be used to infer to the population.

2. This research was limited to the accuracy of the information that was gathered, collected, and analyzed.

3. Regarding sample B, contrary to the initial understanding on the part of the researchers, the instructor was reluctant to relinquish control of the class, and therefore, often affected the ability of the researchers to attain the desired control necessary to effectively administer the survey instrument.

4. Subjective judgment on the part of the researchers was used to interpret comments relative to selected questions. The judgment was applied, however, by attempting not to influence the findings.

CHAPTER III

FINDINGS

Overview

This chapter describes the samples and presents the responses to different questions of the survey instrument.[1] The numbers of each type of reply to the questions are tabulated and described. Selected responses to some of the subjective questions have been included in the findings. For example, a question might require a "yes" or "no" answer and also include an accompanying space for an explanation of remarks. If the respondent's reply includes relevant remarks which are directed toward a particular question, those remarks are summarized and presented. The selected remarks are those which were considered by the researchers to be constructive and useful. Subjective judgment on the part of the researchers was used to interpret comments relative to selected questions, so that the data could be further classified into discrete categories of nominal data. The judgment was applied, however, by attempting not to influence the findings.

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[1]All percentages were calculated by using the total responses only, and not the total sample sizes.

Description of Responses

Tables 3-1 through 3-7 describe the characteristics of sample A (eleven personnel from Aeronautical Systems Division) and sample B (ninety-nine personnel who attended the Advanced Contract Administration Course). Tables 3-8 through 3-22 describe the different responses by each sample of the questions of the survey instrument.

Table 3-1 contains a summarization of responses to question 3b of the introduction: At what level do you work? Fifty percent of personnel in sample B work at division level, while the personnel in sample A are nearly divided between division and branch. Many of the respondents, therefore, work in upper level procurement management, and should be knowledgeable of procurement management information requirements.

Table 3-2 contains a description of responses to question 3d of the introduction: What is your age? Eighty-two percent of the personnel in sample A are in the 36 to 55 year age groups while 90 percent of the personnel in sample B are in the 24 to 55 year age groups. Since nearly 70 percent of the respondents are over thirty-five years old, the personnel samples are, from an age viewpoint, a mature group of respondents.

Responses to question 3e of the introduction--What is your present rank or grade?--are presented in table 3-3. Personnel from sample A are GS-12 and above,

Table 3-1

Functional Working Level

Working Level	Number Sample A	Number Sample B
Division	6	46
Branch	5	6
Contractor Plant	--	14
Base	--	9
Headquarters	--	9
Detachment	--	4
Wing	--	3
Non-Response	--	8

Table 3-2

Age Group of Respondents

Age Group	Number Sample A	Number Sample B
24-35	1	33
36-45	5	23
46-55	4	30
56-65	1	10
Non-Response	--	3

Table 3-3

Rank or Grade of Respondents

Rank or Grade	Number Sample A	Number Sample B
GS- 9	--	12
GS-11	--	30
GS-12	3	36
GS-13	5	8
GS-14	2	--
First Lieutenant	--	1
Captain	--	6
Major	1	2
Lieutenant Colonel	--	2
Non-Response	--	2

while personnel from sample B are GS-9 and above. Therefore, most of the respondents performed duties in a grade that requires them to make management decisions.

Table 3-4 contains a summarization of the responses to question 3f of the introduction: What is your educational level? Ninety-four percent of the personnel from both samples have at least some college and 61 percent of the personnel have at least a bachelor's degree. Exposure to management philosophy, to varying degrees seems, therefore, to apply to a majority of the respondents.

Table 3-4

Educational Level of Respondents

Educational Level	Number Sample A	Number Sample B
High School	--	5
Some College	3	34
Bachelor's Degree	6	47
Master's Degree	2	10
Doctorate Degree	--	1
Non-Response	--	2

Table 3-5 contains a description of the responses to question 1: Which of the following areas best describes your everyday duties? All personnel in sample A are

involved in Contract Administration or buying, while 72 percent of the personnel from sample B are involved in Contract Administration. The respondents, therefore, appear to be qualified from an experience viewpoint, to realistically evaluate procurement management information systems.

Table 3-5

Normal Duties of Respondents

Working Area	Number Sample A	Number Sample B
Contract Administration	7	71
Buying	4	4
Production	--	14
Financial Management	--	6
Quality Assurance	--	3
Non-Response	--	1

Tables 3-6 and 3-7 contain summarizations of the responses to questions 4 and 5 which ask how long they have been in their present job and how many years of procurement experience they have. All personnel of both samples have at least one year of procurement experience and 65 percent of the personnel in sample A have over fifteen years experience in procurement-related

Table 3-6

Amount of Experience in Present Job

Number Years Experience in Present Job	Number Sample A	Number Sample B
Less than 1	--	12
1 through 5	6	72
6 through 10	4	10
Greater than 10	1	2
Non-Response	--	3

Table 3-7

Amount of Procurement Experience

Number Years Experience in Procurement	Number Sample A	Number Sample B
1 through 5	1	25
6 through 10	2	31
11 through 15	1	17
Greater than 15	7	24
Non-Response	--	2

work. This finding further supports the fact that the respondents are well qualified to answer survey questions concerning procurement management information systems.

Table 3-8 contains a description of the responses to question 7: What is the approximate size of your organization? Seventy-nine percent of the personnel from both sample A and sample B indicated that they were part of an organization having less than twenty-five military personnel, and 52 percent of both samples indicated they were part of an organization having over 100 civilian personnel. Most of the respondents, therefore, work in an organization consisting primarily of civilian employees.

Table 3-8

Size of Respondent's Organization

Number of Personnel in Organization	Military		Civilian	
	Number Sample A	Number Sample B	Number Sample A	Number Sample B
1 through 25	9	70	2	14
26 through 50	--	11	2	14
51 through 75	--	2	--	5
76 through 100	--	4	--	11
Greater than 100	--	4	5	47
Non-Response	2	8	2	8

Table 3-9 illustrates the responses to question 8: How geographically dispersed are the personnel in your organization, from the contractor's facility? Eight-two percent of the personnel from sample A and 32 percent of the personnel from sample B are widely dispersed, relative to the contractor's facility, thus indicating a possible communication problem exists with geographical separation.

Table 3-9

Geographical Dispersion from Contractor's Facility

Separation	Number Sample A	Number Sample B
Close	1	34
Separated by a Few Miles	1	29
Widely Dispersed	9	29
Non-Response	--	7

Table 3-10 contains a summarization of the responses to question 9: What methods exist in your organization for exchanges of ideas and for problem solving? If the respondent indicated more than one method, the researchers tabulated the most frequently used method. Fifty-two percent of the personnel of both samples indicated that staff meetings are the most frequently used methods of problem solving.

Table 3-11 addresses the responses to question number 10: How could the internal communications within

Table 3-10

Problem Solving Methods

Method	Number Sample A	Number Sample B
Staff Meeting	8	48
Commander's Call	--	7
Newsletter/Bulletin	2	8
Two-Person Talks	1	24
Written	--	9
Non-Response	--	3

Table 3-11

Internal Communication Improvement

Method	Number Sample A	Number Sample B
More Formal Meetings	1	16
More Informal Discussion	4	41
Greater Dissemination of Relevant Reports	4	28
Non-Response	2	14

your organization be best improved? Eight-two percent of the personnel from both samples indicated that either more informal discussion or greater dissemination of relevant reports would improve internal communications.

Table 3-12 contains a description of the responses to question number 11: Which of the following is most descriptive of the information provided within your organization. Any of these responses: (1) Fails to provide management with relevant data, or (2) Provides an abundance of irrelevant data, or (3) negative remarks in the other-comments block, was interpreted as not being satisfied. Responses of any of the following: (1) Minimum satisfaction in meeting management needs, or (2) no complaints, or (3) positive remarks in the other-comments block, was interpreted as being indicative of satisfaction by users of the system. The following are selected comments considered germane to question number 11:

1. Changes affecting the content of contracts should be disseminated further.

2. Abundant information is provided for management, but very little information is provided to the buyers.

3. Information is timely, relevant, and usable; but is not used sufficiently by upper levels of management.

4. Managers and supervisors acquire facts and knowledge, then hoard it to themselves in an almost child-like, selfish fashion.

5. Personnel are not familiar with all the data and its purposes.

6. Upward flow of information is successful in most instances, whereas downward communication is inadequate.

7. Information should be disseminated faster.

Several respondents indicated that communications are good, resulting in a smooth flow of information. A few of the comments indicated that the required information is available, but is not being provided to the appropriate users. For example, comment number 4 is interpreted by the researchers to mean that some personnel who possess information realize the power of having exclusive information and choose to keep it to themselves.

Table 3-13 contains a description of the responses to question number 12: Is the information you are now using received on time? Fifty-five percent of sample A indicated "no" for an answer, while 79 percent of sample B indicated that information was received on time. Germane remarks included:

1. If the data is received late from the contractor, then the information provided from us to headquarters is late, resulting in reprimands by headquarters. This is something beyond our control.

Table 3-12

Respondents Description of Information

Attitude	Number Sample A	Number Sample B
Satisfied	6	61
Not Satisfied	5	34
Non-Response	--	4

Table 3-13

Timeliness of Data Received

Responses	Number Sample A	Number Sample B
Yes	5	74
No	6	20
Non-Response	--	5

2. It takes much too long to receive engineering and technical data from other Defense Supply Agency (DSA) organizations.

3. The Shortage Status Report is received through channels ten to sixteen days after the end of the month. The bootlegged copies I get are received six to ten days after the end of the month, which is still too slow.

4. Most information requests originating from the contract administrator are not received by the suspense date; consequently, the forecast is unrealistic.

5. After information flows through various headquarters and functional divisions, it quite often arrives late.

6. Information related to new contract clauses and provisions is not received on time.

7. Computer lead time is excessive.

8. The grapevine provides most of the relevant information from two to four weeks prior to official notification.

A few of the comments concerned the fact that data received late from contractors results in comparable late submission of reports to higher headquarters. Despite the fact that the late report was beyond the contract administrator's control, administrative reprimands were still received. Also, several comments indicated that

information received unofficially from informal sources was used, because the official information channels are too slow.

Table 3-14 contains a summarization of the responses to question number 18: What procurement related information do you require, if any, in addition to the information you are now receiving? Eighty percent of sample A and 53 percent of sample B indicated they were satisfied. A remark indicating that no additional information was required was interpreted by the researchers as an expression of satisfaction. The following are examples of remarks considered germane to question number 18:

1. More guidance is needed for an in-depth evaluation of the contractor's progress payment requests.

2. Information concerning small business, labor surplus, and minority business enterprises is needed.

3. Information concerning current workload and historical data is needed.

4. Better information on contractors is needed. Several respondents indicated a need for more timely advice of Armed Services Procurement Regulation (ASPR) changes.

Table 3-15 contains a summarization of the responses to question number 20: Are you confident about the quality of information on the reports you are now

Table 3-14

Additional Procurement Information Requirements

Responses	Number Sample A	Number Sample B
Satisfied	8	39
Not Satisfied	2	34
Non-Response	1	26

Table 3-15

Confidence in Quality of Information Received

Response	Number Sample A	Number Sample B
Yes	3	52
No	8	35
Non-Response	--	12

receiving? As indicated by table 3-15, 61 percent of the respondents from both sample A and sample B said they were confident that the quality of information they were receiving was sufficiently high that decisions based on the data would be valid. However, some contrary remarks were also expressed:

1. The computer reports are only slightly helpful, because they only reiterate what we already know and are often outdated, incorrect, and incomplete.

2. The information is subject to human error and the input often contains errors.

3. Unreliable information is received from the computer printouts.

4. Usually the information received is out of date. Input mistakes cause errors in the output products.

5. Output products require verification and/or purification.

Table 3-16 relates to question number 21: Are you getting duplicate information from any of the reports you are now receiving? Eighty-three percent of the personnel from both samples indicated they were not receiving any duplicate information. Some selected remarks considered germane to question number 21 were:

1. Certain data is provided in different formats on several reports. Often one report in a summary format is more timely than other reports.

2. Summary reports duplicate other information.

3. The same information is repeated on each weekly run.

Table 3-16

Receipt of Duplicate Information

Response	Number Sample A	Number Sample A
Yes	3	13
No	8	70
Non-Response	--	16

Table 3-17 contains a summarization of the responses to question number 22: Do you consider the amount of time you spend in inputting information into the system you are now using is worthwhile? Sixty-four percent of the respondents indicated their information systems permitted them the benefit of time savings.

Table 3-18 contains a description of the responses to question number 23: Please indicate the most beneficial feature of your present procurement related information system. The following are selected comments considered germane to question number 23:

1. The information system permits tracking of a large number of contracts.

Table 3-17

Time Saved Resulting from the Information System

Response	Number Sample A	Number Sample B
Yes, the System Saves Time	7	43
No	4	24
Not Applicable	--	22
Non-Response	--	10

Table 3-18

Beneficial Features of Procurement Information System

Response	Number Sample A	Number Sample B
Beneficial Feature Indicated	9	50
None Indicated	2	11
Non-Response	--	38

2. The information system provides an overall view of the contracts assigned for administration.

3. The information system provides quick visibility without manual screening.

4. The information system provides the status of procurement actions.

5. The information system provides easy access to information concerning forecasted and actual deliveries.

6. Procurement status reports are beneficial in that they help to reduce the number of delinquent orders and contracts.

7. The time required to manually compile information is reduced.

8. Management reporting information is extracted from the information systems without any action on the buyers part except the minimal time required to input data.

9. The system provides summary information in any desired format.

10. The system's primary benefit to management is its historical value.

11. The information system provides horizontal communication.

12. The system readily provides desired relevant information.

13. The information system allows the managers to make comparative analysis on manpower versus workload in order to adequately forecast future trends.

14. The system provides accurate progress status on large numbers of contracts.

Table 3-19 contains a description of the responses to question number 24: What is the most undesirable feature of your present procurement-related information system? Seventy-nine percent of the personnel from both samples answered the question, thus indicating undesirable features do exist in their information systems. Examples of comments are:

1. The information system requires too much personnel time.

2. There is too much data. Requirements should be reviewed to determine if all the data is really needed.

3. The output is inaccurate and there is too much time lag.

4. Information is outdated by the time it is received.

Table 3-19

Undesirable Features of Procurement Information System

Response	Number Sample A	Number Sample B
Irritating Facts Indicated	9	59
No Irritating Facts Indicated	2	19
Non-Response	--	21

Table 3-20 contains a description of the responses to question number 25: From your personal viewpoint, what do you consider to be the most irritating fact concerning the inputting of any data into the information system you work with? Eighty percent of the personnel of both samples indicated that irritating features exist when inputting data into their information system. The following are selected remarks considered germane to question number 25:

1. The printing of the data input form is too small and is hard to read.

2. Inputting the data requires too much documentation or justification.

3. The information is most often input by personnel who understand very little about contract administration.

Several respondents indicated the data must be input in a very specific exact manner.

Table 3-20

Irritating Facts Inputting Data Into Information System

Response	Number Sample A	Number Sample B
Irritating Facts Indicated	9	66
No Irritating Facts Indicated	2	17
Non-Response	--	17

Table 3-21 contains a description of the responses to question number 26: Generally, is the data you receive as output from your present procurement information system in an acceptable format? Eighty-one percent of the personnel from both samples indicated their output was in a satisfactory format. The only comments received concerning the format had to do with coding and space. For example, there were several comments concerning the amount of extra work imposed on the user when there is extensive coding of rarely used information. Also, there were a few comments concerning lack of adequate space to allow the user to make written remarks on the output.

Table 3-21

Acceptable Format of Data Received

Response	Number Sample A	Number Sample B
Yes	10	69
No	1	18
Non-Response	--	12

Table 3-22 contains a summarization of the responses to question number 31: Reflecting back on some of the more difficult decisions you have made in your present job, what changes would you suggest concerning the information you had available? When the respondent indicated more than one answer, all answers were tabulated.

Table 3-22

Information Problems Related to Decisions

Response	Number Sample A	Number Sample B
Needed More External Data	3	22
Needed More Internal Data	1	22
Needed Better Organization of Data	3	29
Needed More Timely Data	4	15
Usually Had Too Much Data	2	7
Other	3	9
Non-Response	--	28

The following are selected remarks considered germane to question number 31:

1. A large amount of data is usually available. Decisions are not always based on available data, rather they are based on experience.

2. Data received from the system is efficient and effective but underused. Management needs to use the data to take corrective action to alleviate specific problems.

Question number 32 requested additional comments or suggestions concerning information requirements. Some of the comments follow:

1. Too much time is spent submitting reports.

2. There is no standardization of information systems within the Department of Defense.

3. More training on information systems is required.

4. A serious study of user requirements is needed.

Summarization of Data Not Used

As in any study, some of the areas investigated are for background use only, and are not intended as direct inputs for analysis. For example, questions 3a and 3b of the introduction were asked as a means of increasing the validity of the responses. The researchers

felt that a requirement for the respondent to provide his social security number would result in a more conscientious reply, but would preserve the necessary anonymity.

The responses to questions 2 and 3 amplified question 1, and the results indicated that there was insufficient difference to warrant tabulation.

The responses to questions 3g and 6 were so varied that tabulation and analysis of them would have provided marginal or no benefit to the survey. In other words, the questions probably should not have been included.

Questions 13 through 17, 19, and 27 through 30 were originally included in the survey instrument because the researchers planned to compare the responses to these questions with the Air Force Systems Command Acquisition Management Information System (AFSCAMIS). The intent was to determine whether or not AFSCAMIS would satisfy user needs. Unfortunately, these questions became irrelevant because the scope of the AFSCAMIS Program changed during the period of this research; i.e., AFSCAMIS was originally designed to provide real time information during all phases of procurement, but present emphasis is on Source Data Automation (SDA) of contract administration information (See footnote 1, chapter 1).

CHAPTER IV

ANALYSIS

Overview

This chapter relates the research questions to the findings of the survey instrument, which were tabulated and presented in chapter III.

First, each of the following research questions is addressed and related to applicable responses of the survey instrument:

1. Determine if procurement managers' information needs are being satisfied.

2. Determine if procurement managers are receiving duplicate information.

3. Determine if procurement managers are satisfied with the timeliness of their information products.

4. Determine if procurement managers are confident about the quality of information in the reports that they receive.

Next, primary conclusions are made regarding each research question and corollary conclusions are drawn from subjective responses to selected questions. Finally, recommendations are presented.

Primary Conclusions

Research Question Number 1. Tables 3-12, 3-14, 3-17 and 3-21 describe responses to questions 11, 18, 22 and 26 of the survey instrument. The researchers determined these questions to be indicative of user's satisfaction of their information needs. The responses to these questions are, therefore, related to research question number 1 which is: Determine if procurement managers' information needs are being satisfied.

Table 3-12 contains a summarization of the responses to question number 11 which asks the respondent to describe the information provided within his organization. Fifty-five percent from sample A and 64 percent from sample B, with a 63 percent total from both samples, indicated their information needs were being satisfied.[1]

Table 3-14 contains a summarization of the responses to question number 18, which asks the respondent if he requires additional procurement-related information. Eighty percent of sample A and 53 percent of sample B, with a 57 percent total from both samples, indicated their information needs were being satisfied.

Table 3-17 contains a summarization of the responses to question number 22, which basically asked the

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[1]All percentages were calculated by using the total responses only, and not the total sample sizes.

respondent if he was satisfied with the information provided by the system with regard to the amount of time required to input information into the system. Sixty-four percent of both samples indicated their information system provided time savings and they considered it worthwhile. A "yes" response to this question was interpreted as being a satisfied user.

Table 3-21 contains a summarization of the responses to question number 26, which requested information concerning the procurement managers satisfaction with the format of the output of his information products. Ninety-one percent of sample A and 79 percent of sample B, with an 81 percent total using both samples, indicated they were satisfied with the format of the information that they received.

Although tables 3-12, 3-14, 3-17 and 3-21 contain a summarization of data which indicates a majority of the respondents information needs are being satisfied, there still remains a substantial percentage of procurement management personnel whose information needs are not being satisfied.

Research Question Number 2. Table 3-16 contains a description of the responses to question number 21 of the survey instrument. The researchers determined that responses to this question are related to research question number 2 which is: Determine if procurement managers are receiving

duplicate information. Seventy-three percent of sample A and 84 percent of sample B indicated they were not receiving duplicate information. Remarks were received from the 17 percent of the total respondents indicating the receipt of duplicate information. However, few of these comments appeared to indicate that the respondent did not understand the intent of the question. The question was obviously intended to determine whether or not the respondent received duplicate information from different sources. However, some respondents indicated they considered information that is repetitive and appears on recurring reports as being a duplication of information.

Research Question Number 3. Table 3-13 contained a summarization of the responses to question number 12 of the survey instrument. Responses to this question are related to research question number 3 which is: Determine if procurement managers are satisfied with the timeliness of their information products. Forty-five percent of sample A and 79 percent of sample B, with a 75 percent total from both samples, indicated they were satisfied with the timeliness of their information products. The two types of remarks that occurred most frequently concerned the following areas:

1. Required information is received late from the contractor or another outside source, resulting in late submission of reports, and

2. There is a reliance on information from informal sources rather than from official channels because the unofficial sources of information are faster.

Research Question Number 4. Table 3-15, a summarization of the responses to question number 20 of the survey instrument relates to this research question which is: Determine if procurement managers are confident about the quality of information in the reports they receive. Seventy-three percent of sample A and 60 percent of sample B, with a 61 percent total from both samples, indicated they are confident about the quality of information in the reports they receive. However, as noted in the findings, there were sufficient comments about the effect of human errors when inputting data into an information system, that this should be a matter of particular concern to designers and users.

Summary

In addition to the preceding information directly related to the four research questions, other information which was received and tabulated in chapter III indirectly addresses the research questions. For example, tables 3-18 and 3-19 contain summarization of responses to questions 23 and 24. These questions requested the respondent to identify beneficial and undesirable features of their information systems. Also, table 3-20 contains

a description of the responses to question number 25, which requested information about irritating facts concerning the inputting of information. Chapter III also includes responses to question number 31 and remarks considered germane to question number 32, which requested additional comments or suggestions concerning the respondent's information requirements. The following remarks previously stated in chapter III, are related to the research questions and are stated here again for emphasis.

1. The information system permits tracking of a large number of contracts.

2. The information system provides good visibility of contract status.

3. The information system helps reduce the number of delinquent orders.

4. The information system saves time when compiling information.

5. The information systems primary benefit is the summary data which it can provide.

6. Sometimes management personnel do not effectively utilize available information.

7. The information system requires too much personnel time.

8. Information products are inaccurate and outdated.

9. Information is often input by personnel who know very little about contract administration.

10. Too much time is spent submitting reports.

11. There is a lack of standardization of information systems within the Department of Defense.

12. More training is needed for personnel who use procurement information systems.

13. A study of user information requirements is needed.

In consideration of all the above, therefore, the following general conclusions are made:

1. Procurement managers' information needs are being substantially satisfied, but certainly not completely. An effective procurement management information system could reduce or eliminate many of the unsatisfactory conditions.

2. Receipt of duplicate information is not a significant problem.

3. Although 75 percent of the respondents were satisfied with the timeliness of their information products, this is an area which seems to require further explicit and focused study.

4. Sixty-one percent of the respondents indicated confidence in the quality of the information they receive. The researchers consider 61 percent to be lower than desirable. One of the primary reasons users lack confidence in their information products seems to be a lack

of confidence in the skill of the personnel who input the data. This is a training problem which, if in fact exists, can be easily corrected.

Corollary Conclusions

A corollary conclusion drawn from this research is that procurement management personnel attitudes toward a procurement management information system are, to a degree, related to the amount of work required to use the system. The researchers realize this is not supported by the data, but concluded this from conversations with the respondents. The researchers, therefore, suggest that information systems user's attitudes about their informamation systems are related to the amount of time or work the system requires.

In addition, there was a nearly universal favorable reaction by procurement management personnel contacted, to the intent of this study. It is concluded, therefore, that the need for this research did, in fact, exist and that further, more comprehensive studies should be conducted.

Recommendations

The following recommendations are presented:

1. Procurement management information system personnel should insure that personnel who input data into

the system or use output products of the system are sufficiently trained concerning their functional relationship with the computer.

2. Designers of management information systems should first define user information needs and then use both technical and functional personnel to develop a system which will best satisfy the user's requirements.

APPENDIXES

APPENDIX A

DRAFT SURVEY INSTRUMENT

APPENDIX A

DRAFT SURVEY INSTRUMENT

Introduction

1. This data gathering device is part of a study to determine what information procurement managers need in order to make effective decisions. The results will be subdivided into classes of data so that statistical techniques can be used to analyze the findings and provide recommendations concerning the procurement management information requirements. It will be used as part of thesis work at the School of Systems and Logistics, Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio.

2. Please answer all questions honestly and candidly as possible. No research on your part is necessary; just reply using your present knowledge and experience. This is not an attempt to gather data to rate performance. Strict anonymity of all responses will be maintained. We are interested in what you determine to be the necessary and unnecessary information requirements of a procurement manager, and also how you use your time. Please answer the questions in your own words. Additional comments relative to any question are welcomed.

3. Thank you for your cooperation.

Part 1

Information Requirements and Characteristics

1. What is the approximate size of your organization?

   Number of military _____

   Number of civilians _____

2. How geographically dispersed are the personnel in your organization from the contractor's facility? (check one)

   ( ) Very close (same building or floor)
   ( ) Close (different buildings, within one mile)
   ( ) Separated by a few miles
   ( ) Other (please explain)

3. What methods exist in your organization for exchanges of ideas and for problem solving? (check as applicable) Please indicate frequency (i.e., hours/weeks, etc.)

   ( ) Regular staff meetings _____
   ( ) Luncheon meetings _____
   ( ) Commander's call _____
   ( ) Newsletter/bulletin _____
   ( ) Two person talks _____
   ( ) Written _____
   ( ) Other _____

4. How could the internal communication within your organization be best improved?

   ( ) More formal meetings (i.e., staff meeting)
   ( ) More informal discussion
   ( ) Greater dissemination of relevant reports
   ( ) Other (please explain)

5. Which of the following is most descriptive of the information provided within your organization?

   ( ) Fails to provide management with relevant data
   ( ) Provides an abundance of irrelevant data
   ( ) Minimum satisfaction in meeting management needs
   ( ) No complaints
   ( ) Other (please explain)

6. Does your organization have access to a computer?

( ) Yes
( ) No

If the answer to this question is "yes," please indicate what type of capabilities are available (i.e., contractor, leased net, time shared, etc.) and what your organization uses the computer for (i.e., programming, running reports, etc.).

7. What type of Procurement Management Information System do you have?

8. Do you input any procurement related information into any management information system?

( ) Yes
( ) No

9. If your answer to Number 8 was "yes," how do you input the data?

( ) Procurement Instrument Identification Number (PIIN)
( ) Contract Line Item Number (CLIN)
( ) Exhibit Line Item Number (ELIN)
( ) Financial Data
( ) As of Date
( ) Other (please explain)

10. What is the planning time frame for inputting into and reacting to the information system that you now use? Please indicate the type of reports and amount of time required.

11. Reflecting back on some of the more difficult decisions that you have made in your present job, what changes would you suggest concerning the information you had available?

( ) Needed more data from external sources
( ) Needed more data from internal sources
( ) Needed better organization of available data
( ) Needed more timely data
( ) Usually had too much data
( ) Other (please explain)

12. Please list the three most important reports that you review and/or approve, including contractor generated reports. Please list the report title, description, or number and the frequency that the report requires updating.

13. Which of the following types of information are you most concerned with when performing your normal duties?

( ) Contract Administration
( ) Production
( ) Logistics
( ) Progress Control (financial)
( ) Accounting and Finance
( ) Quality Assurance
( ) Other (please indicate)

14. Please indicate the most beneficial feature of your present procurement related information system. Why?

15. What is the most undesirable feature of your present procurement related information system? Why?

16. From your personal viewpoint, what do you consider to be the most irritating fact concerning the inputting of any data into the information system that you work with?

17. Generally, is all of the data that you receive as output from your present procurement information system in an acceptable format?

( ) Yes
( ) No

If the answer to this question is "no," please explain how the format of the output should be changed. Indicate which reports and the changes needed.

18. What procurement related information from an information system are you receiving in your present job? Please indicate the three most important types of information and the format that you are receiving it in.

19. What information do you require, if any, in addition to the information that you are now receiving? Please indicate the desired format as well as the type of information.

20. Is the information that you are now using received on time?

( ) Yes
( ) No (please explain)

21. How many reports do you prepare for submission to higher headquarters? _____

22. How many hours per week do you spend on preparation of reports for higher headquarters? _____

23. Please list the reports that you submit, frequency of submission, and the level of management which will receive the report.

Report Title	Frequency of Submission	Recipient of the Report

24. Are you confident about the quality of information in the reports that you are now receiving?

( ) Yes
( ) No (please explain)

25. Are you getting duplicate information from any of the reports that you are now receiving?

( ) Yes (please explain)
( ) No

26. Do you consider that the amount of time that you spend in inputting information into the system that you are now using is worthwhile? In other words, is the system easy and convenient enough to allow you to benefit by saving time?

( ) Yes
( ) No
( ) Not applicable

27. Please indicate any other comments/suggestions concerning your information requirements?

Part 2

Time Survey

Time is important in procurement. In order to determine how you spend your time, please indicate the percentage of your working time spent on each of the following functions/activities. If any of the activities do no apply to you place a zero (0%) percent in that particular block. The sum of the activities should equal 100 percent.

A. Managerial

Planning/Organizing	_____%
Controlling/Directing	_____%
Briefing/Presentations	_____%
Reports and Administration	_____%

B. Buying (supplies, services, and contract maintenance) _____%

C. Contract Administration

Pre-award	_____%
Award	_____%
Post-award	_____%

D. Other:

Please indicate (i.e., buying equipment) _____%

Part 3

Personal Data

The following information is needed to enable classification of the data. This page will be removed from the other pages after the data has been classified, in order to assure anonymity.

1. Last four numbers of your social security number.

2. What organization are you associated with?

3. At what level do you work? (i.e., Base, Wing, Division, etc.).

4. What is your age?

5. What is your present rank or grade?

6. What is your educational level? (i.e., less than high school, high school, some college, bachelor's degree).

7. What is your educational field?

8. How many years have you spent in procurement related jobs?

9. What is your present duty title?

10. How long have you been in your present job?

11. What are the three most important functions that you perform in your present job, and what percentage of your time do you spend doing these functions?

12. If you have held any other procurement related jobs prior to your present job, please list the last three procurement related duty titles and the amount of your experience. (i.e., Base Procurement Officer for three years).

APPENDIX B

SURVEY INSTRUMENT

APPENDIX B

SURVEY INSTRUMENT

Introduction

1. This data gathering device is part of a study to determine what information procurement managers need in order to make effective decisions. The results will be subdivided into classes of data so that statistical techniques can be used to analyze the findings and provide information requirements. It will be used as part of thesis work at the School of Systems and Logistics, Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio.

2. Please answer all questions honestly and candidly as possible. No research on your part is necessary; just reply using your present knowledge and experience. This is not an attempt to gather data to rate performance. Strict anonymity of all responses will be maintained. We are interested in information requirements of a procurement manager. Please answer the questions in your own words. Additional comments relative to any questions are welcomed.

3. The following information is needed to enable classification of the data. This information will be

removed from the other pages after the data has been classified, in order to assure anonymity.

a. Last four numbers of your social security number.

b. What organization are you associated with?

c. At what level do you work? (i.e., Base, Wing, Division, etc.)

d. What is your age.

e. What is your present rank or grade?

f. What is your educational level? (i.e., less than high school, high school, some college, bachelor's degree.)

g. What is your educational field?

4. Thank you for your cooperation.

Survey Instrument

Please answer all questions as to how they apply to you and your everyday duties.

1. Which of the following areas best describe your normal duties?

   ( ) Contract Administration
   ( ) Quality Assurance
   ( ) Production
   ( ) Engineering
   ( ) Data and Financial Management
   ( ) Other (please indicate)

2. What are the three most important functions that you perform in your present job, and what percentage of your time do you spend doing these functions? (i.e., Contract Administration, Post Award, 80 percent of time)

3. What is your present duty title?

4. How long have you been in your present job?

5. How many years have you spent in procurement-related jobs?

6. If you have held any other procurement-related jobs prior to your present job, please list the last three procurement-related duty titles and the amount of your experience. (i.e., Base Procurement Officer for three years)

7. What is the approximate size of your organization?

_____ Number of Military

_____Number of Civilians

8. How geographically dispersed are the personnel in your organization from the contractor's facility? (check one)

( ) Very close (same building or floor)
( ) Close (different buildings, within 1 mile)
( ) Separated by a few miles
( ) Other (please explain)

9. What methods exist in your organization for exchanges of ideas and for problem solving? (check as applicable) Please indicate frequency (i.e., hours/week, etc.).

( ) Regular Staff Meetings	_____
( ) Luncheon Meetings	_____
( ) Commander's Call	_____
( ) Newsletter/Bulletin	_____
( ) Two-person talks	_____
( ) Written	_____
( ) Other	_____

10. How could the internal communication within your organization be best improved?

( ) More formal meetings (i.e., Staff Meeting)
( ) More informal discussion
( ) Greater dissemination of relevant reports
( ) Other

11. Which of the following is most descriptive of the information provided within your organization?

( ) Fails to provide management with relevant data
( ) Provides an abundance of irrelevant data
( ) Minimum satisfaction in meeting management needs
( ) No complaints
( ) Other (please explain)

12. Is the information that you are now using received on time?

( ) Yes
( ) No (please explain)

13. How many reports do you prepare for submission to higher headquarters?

_____

14. How many hours per week do you spend on preparation of reports for higher headquarters?

_____

15. Please list the reports that you submit, frequency of submission, and the level of management which will receive the report (i.e., Activity Report, Monthly, Headquarters).

Report Title	Frequency of Submission	Recipient of the Report

16. What procurement-related information from subordinate and lateral activities are you receiving in your present job? Please indicate the most important types of information and the format that you are receiving it.

17. What procurement-related information from higher headquarters are you receiving in your present job? Please indicate the most important types of information and the format that you are receiving it.

18. What procurement related information do you require, if any, in addition to the information that you are now receiving? Please indicate the desired format as well as the type of information.

19. What type of Procurement Management Information System do you have? (i.e., manual, computer, etc.)

20. Are you confident about the quality of information in the reports that you are now receiving?

( ) Yes
( ) No (please explain)

21. Are you getting duplicate information from any of the reports that you are now receiving?

( ) Yes (please explain)
( ) No

22. Do you consider that the amount of time that you spend in inputting information into the system that you are now using is worthwhile? In other words, is the system easy and convenient enough to allow you to benefit by saving time?

( ) Yes
( ) No
( ) Not applicable

23. Please indicate the most beneficial feature of your present procurement related information system. Why?

24. What is the most undesirable feature of your present procurement-related information system? Why?

25. From your personal viewpoint, what do you consider to be the most irritating fact concerning the inputting of any data into the information system that you work with?

26. Generally, is the data that you receive as output from your present procurement information system in an acceptable format?

( ) Yes
( ) No

If the answer to this question is no, please explain how the format of the output should be changed.

27. Does your organization have access to a computer?

( ) Yes
( ) No

If the answer to this question is yes, please indicate what type of capabilities are available (i.e., contractor, leased net, time shared, etc.) and what your organization uses the computer for (i.e., programming, running reports, etc.).

28. Do you input any procurement-related information into any management information system?

( ) Yes
( ) No

29. If you answer to Question Number 28 was "yes," how do you input the data?

( ) Procurement Instrument Identification Number (PIIN)
( ) Contract Line Item Number (CLIN)
( ) Exhibit Line Item Number (ELIN)
( ) As of Date
( ) Financial Data
( ) Other (please explain)

30. What is the planning time frame for inputting into and reacting to the information system that you now use? Please indicate the type of reports and amount of time required.

31. Reflecting back on some of the more difficult decisions that you have made in your present job, what changes would you suggest concerning the information you had available?

( ) Needed more data from external sources
( ) Needed more data from internal sources
( ) Needed better organization of available data
( ) Needed more timely data
( ) Usually had too much data
( ) Other (please explain)

32. Please indicate any other comments/suggestions concerning your information requirements.

SELECTED BIBLIOGRAPHY

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A. REFERENCES CITED

1. Baumgartner, John S. Project Management. Homewood, Ill.: Richard D. Irwin, 1963, p. 49.

2. D'Angelo, Lieutenant Colonel Anthony P., USAF. Head, Department of Management Studies, Air Force Institute of Technology, School of Systems and Logistics, Wright-Patterson Air Force Base, Ohio. Personal interview. 15 January 1975.

3. Emch, Arnold F.. "Control Means Action," (in) Harold Koontz and Cyril O'Donnell (eds.), Management: A Book of Readings. New York: McGraw-Hill, 1964. pp. 431-437.

4. Kayafas, Pete. GS-15, USAF, Chief of Functional Systems Division, Directorate of Procurement Data Systems, DCS/Procurement, Air Force Systems Command, Wright-Patterson Air Force Base, Ohio. Personal interview. 6 December 1974.

5. _____. Chief of Functional Systems Division, Directorate of Procurement Data Systems, DCS/Procurement, Air Force Systems Command, Wright-Patterson Air Force Base, Ohio. Personal interview. 20 January 1975.

6. Li, David H. Design and Management of Information Systems. Chicago: Science Research Associates, 1972.

7. Martin, Lieutenant Colonel Martin D., USAF. Assistant Professor of Logistics Management, Air Force Institute of Technology, School of Systems and Logistics, Wright-Patterson Air Force Base, Ohio. Personal interview. 6 December 1974.

8. Meacham, Armond S., GS-14, USAF, Group Leader Requirement Group, Directorate of Procurement Data Systems, DCS/Procurement, Air Force Systems Command, Wright-Patterson Air Force Base, Ohio. Personal interview. 6 December 1974.

9. Michalowski, Major Thomas J., USAF. Research Associate, Management Research Office, Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio. Personal interview. 21 October 1974.

10. _____. Research Associate, Management Research Office, Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio. Personal interview. 21 January 1975.

11. Mockler, Robert J. Information Systems for Management. Columbus, Ohio: Charles E. Merrill Publishing, 1974.

12. Poe, Major William E., USA. Course Director, Advanced Contract Administration, Continuing Education Division. Air Force Institute of Technology, School of Systems and Logistics, Wright-Patterson Air Force Base, Ohio. Personal interview. 20 January 1975.

13. Post, Lieutenant Colonel Willard R., USAFR. Associate Professor, Frederick College, Frederick, Maryland. Personal interview. 20 December 1974.

14. Ross, Joel E. Management by Information System. Englewood Cliffs, N.J.: Prentice-Hall, 1970.

15. Sollenberger, Harold M. Major Changes Caused by the Implementation of a Management Information System. New York: National Association of Accountants, 1968.

16. U.S. Department of the Air Force. Air Command and Staff College Course 1B, Command and Management. Phase IV, Management of Resources. Lesson 20, Systems Acquisition and Project Management. Extension Course Institute, Gunter Air Force Base, Alabama, September, 1972.

17. _____. Air Command and Staff College Course 1B, Command and Management. Phase IV, Management of Resources. Lesson 21, USAF Logistics Management. Extension Course Institute, Gunter Air Force Base, Alabama.

18. _____. Data Automation Requirements (DAR) for Implementation of the Air Force Systems Command Acquisition Management Information Systems (AFSCAMIS). Andrews Air Force Base, Maryland: Directorate of Procurement Data Systems (PPQ) DCS Procurement and Production Headquarters, Air Force Systems Command, 1973.

19. Zani, William M. "Blueprint for MIS." Harvard Business Review, November-December 1970, p. 430.

B. RELATED SOURCES

Barnett, Arnold. "Preparing Management for MIS," (in) Steven Teglovic, Jr. and Rober Lynch (eds.), Topics in Management Information Systems. New York: MSS Information Corporation, 1973, pp. 191-197.

Blumenthal, Sherman C. Management Information Systems: A Framework for Planning and Development. Englewood Cliffs, N.J.: Prentice-Hall, 1969.

Boyce, R. O. Integrated Managerial Controls. New York: American Elsevier Publishing, 1968.

Brightman, Richard W., Bernard J. Luskin and Theodore Tilton. Data Processing for Decision-Making. New York: Macmillan, 1971.

Brightman, Richard W. Information Systems for Modern Management. New York: Macmillan, 1971.

Campbell, William B., and Stephen Vaughan Ballou. Form and Style Theses, Reports, Term Papers. 4th ed. Boston: Houghton Mifflin, 1974.

Cerf, Vinton G., and Robert Kahn. "A Protocol for Packet Network Intercommunication," IEEE Transaction on Communications, Vol. COM-22, No. 5, May 1975.

Daniel, D. Ronald. "Management Information Crisis," (in) Harold Koontz and Cyril O'Donnell (eds.), Management: A Book of Readings. New York: McGraw-Hill, 1964, pp. 443-452.

"Data Base Systems A Mistake for Many," Administrative Management, May 1972, p. 68.

Dearden, John and F. Warren McFarlan. Management Information Systems Text and Cases. Homewood, Ill.: Richard D. Irwin, 1966.

Management Review of Contract Administration and Material Acquisition Information Systems. Washington, D.C.: Office of the Secretary of Defense for Installations and Logistics, 1974.

Meltzer, Morton F. The Information Imperative. New York: American Management Assocation, 1971.

Murdick, Robert G., and Joel E. Ross. "Future Management Information Systems, Part I, Part II," (in) Steven Teglovic, Jr., and Robert Lynch (eds.), Topics in Management Information Systems. New York: MSS Information Corporation, 1973, pp. 278-295.

Norman, Ralph L. "Management Information Systems in Government-Desirable Characterisitcs, Part II," Armed Forces Comptroller, Vol. 18, No. 3, Summer 1973, pp. 30-32, 46.

Payne, Stanley L. The Art of Asking Questions. Princeton, N.J.: Princeton University Press, 1951.

Petit, Thomas A. "Systems Approach to Management Theory," (in) Steve Teglovic, Jr., and Robert Lynch (eds.), Topics in Management Information Systems. New York: MSS Information Corporation, 1973, pp. 198-204.

Price, Gerald F. "The Ten Commandments of Data Base," (in) Steve Teglovic, Jr., and Robert Lynch (eds.), Topics in Management Information Systems. New York: MSS Information Corporation, 1973, pp. 157-177.

Prince, Thomas R., Ph.D. Information Systems for Management Planning and Control. Homewood, Ill.: Richard D. Irwin, 1966.

Radford, K. J. Information Systems in Management. Reston, Va.: Reston Publishing, 1973.

Roberts, Lawrence G. Computer Resource Sharing with the ARPA Network. Arlington, Va.: Advanced Research Projects Agency, 1973.

Sherwin, Douglas S. "The Meaning of Control," (in) Harold Koontz and Cyril O'Donnell (eds.), Management: A Book of Readings. New York: McGraw-Hill, 1974, pp. 426-430.

Study of the Automation of the Logistics System at Base Level (Stalog Study Report), Vol. IV, Executive Brief, Washington, D.C.: Headquarters United States Air Force Deputy Chief of Staff Systems and Logistics, 1973.

Thorne, Jack F. "Critical Factors in the Implementation of a Real-Time System," (in) Steve Teglovic, Jr., and Robert Lynch (eds.), Topics in Management Information Systems. New York: MSS Information Corporation, 1973, pp. 136-146.

Turpin, John B. "Communication Needs of MIS," Journal of Systems Management, December 1972, pp. 28-31.

U.S. Department of the Air Force. Style and Guidelines Manual for Theses and Technical Reports. 4th rev. School of Systems and Logistics, Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio, May, 1974.

Wallace, John B., Jr., Ph.D., CDP. "Improving Communication between Systems Analyst and User," Data Management, June 1972, pp. 21-24.

Werner, David J. "Designing Rational Systems," Journal of Systems Management, January 1973, p. 38.

Wessler, Barry D., and Richard B. Hovey. "Public Packet-Switched Networks," Datamation, July 1974, pp. 85-87.

Zakarian, Z. V. "The Mad Mad World of Data Communications," (in) Steve Teglovic, Jr., and Robert Lynch (eds.), Topics in Management Information Systems. New York: MSS Information Corporation, 1973, pp. 128-135.

End 4-77